Challenges in Future Requirements and Directions: "The Way Ahead"

86th Coastal Engineering Research Board Meeting

Data is critical infrastructure for managing coastal water resource systems

San Diego, CA

3 June 2009

W. Jeff Lillycrop

Technical Director, Navigation

ERDC / CHL

Overview

- Synthesize Presentations
- Discuss Needs
- Identify a conceptual framework
- Identify Challenges

Needs / CWG

- Standardized and accessible **data storage** (consistent into the future, adaptive, robust, discoverable, not program-specific)
- Consistent national guidance and data collection standards with identified POC's
- Identify **regional and time-scale issues** and needs
  - Regional cooperation and knowledge of data collection efforts would encourage more data sharing and less data collection overlap
  - Potential identification of "Keepers of Data" (i.e. water level, wave, profile, etc.) to maintain consistency and access
- Identify data needs to support **multiple scenario, risk-based, and performance-based** investigations
- Identify data collection needs related to projects / people at risk (benefits/payoffs)
- Move toward consistent base level funding of long-term data needs
- Survey helps summarize current status. Additional steps needed to address:
  - What data already exists? What data do we need and why? What

Needs / OCM

- A broad OCM community
- A clear understanding of information required by ocean and coastal decision-makers and resource managers
- A comprehensive, coordinated, long-term, sustainable OCM program providing the basic data and derived information products at appropriate scales and time intervals to support ecosystem-based approaches to resource management
- One-stop data and product discovery
- Map Once - use & fuse many times!

Needs / IOOS

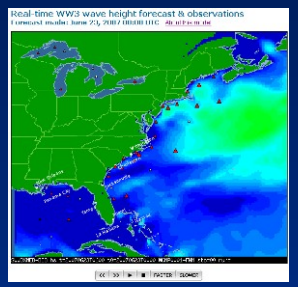
Data Collector

Wave buoy

- Collection New Sensors
- Quality control
- Standard Formats, including GIS
- More Powerful Servers
- Established Archives

Data User

- Data Discovery “Deep” web
- “User friendly” Acquire
- Quality control
- Integrate w/other data customizable
- Analyze/Explore standard tools
- Integrated Products animated, customized
- Interpret Scenario testing
- Better Decisions



Wave Forecas

Synopsis

- Data is required to execute our missions

- We have requirements for a wide range of data types – temporal, spatial, financial, real-time, legacy, biological, chemical, physical, environmental, economic…

- Corps collects / produces a lot of data that is indispensable to us, our stakeholders, and the public

- Corps relies on other agencies for much data: other Fed (USGS, NOAA, others), coastal States (TX, LA, MS, AL, FL, CA, OR, WA, all), NGO's, and Universities

- There are national & regional issues that require data partnerships to adequately address

- Need a sustainable framework to discover, access, and use data

DIGITAL COAST

Decision Support

- Habitat Priority Planner
- Nonpoint-Source Pollution and Erosion Comparison Tool
- Impervious Surface Analysis Tool
- CanVis Visual Simulation Tool
- Multipurpose Marine Cadastre

Informational

- Storm Mapping Tutorial
- Storm Data Resource Guide

Data Access and Visualization

- Hurricane Evacuation Zones Mapping Tool
- Legislative Atlas
- Historical Hurricane Tracks IMS
- Hazard Assessment Tool

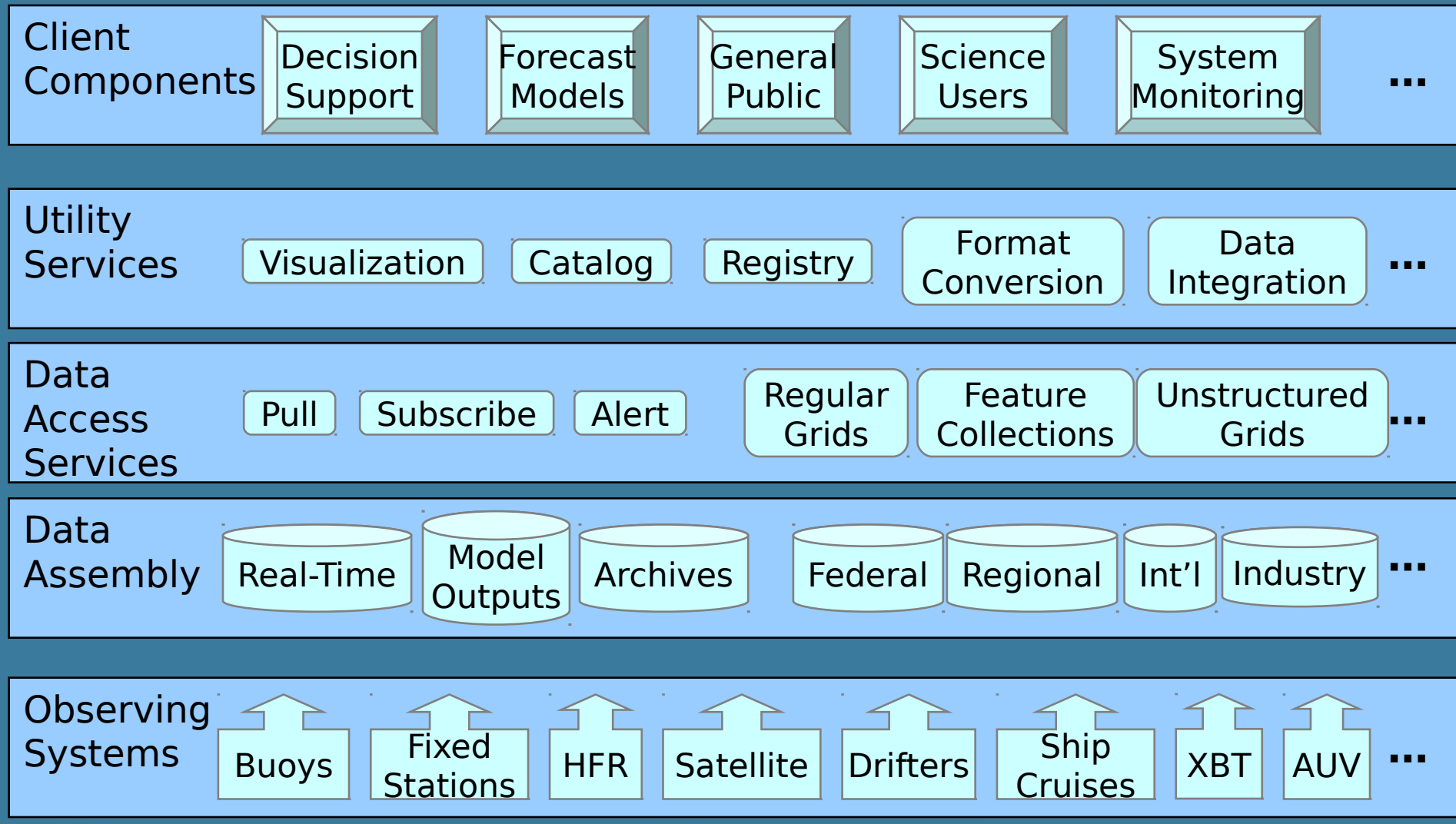
Data Handling Tools

- Lidar Data Handler
- Chart Reprojector
- Electronic Navigational Chart Handler
- Nautical Charting Viewer

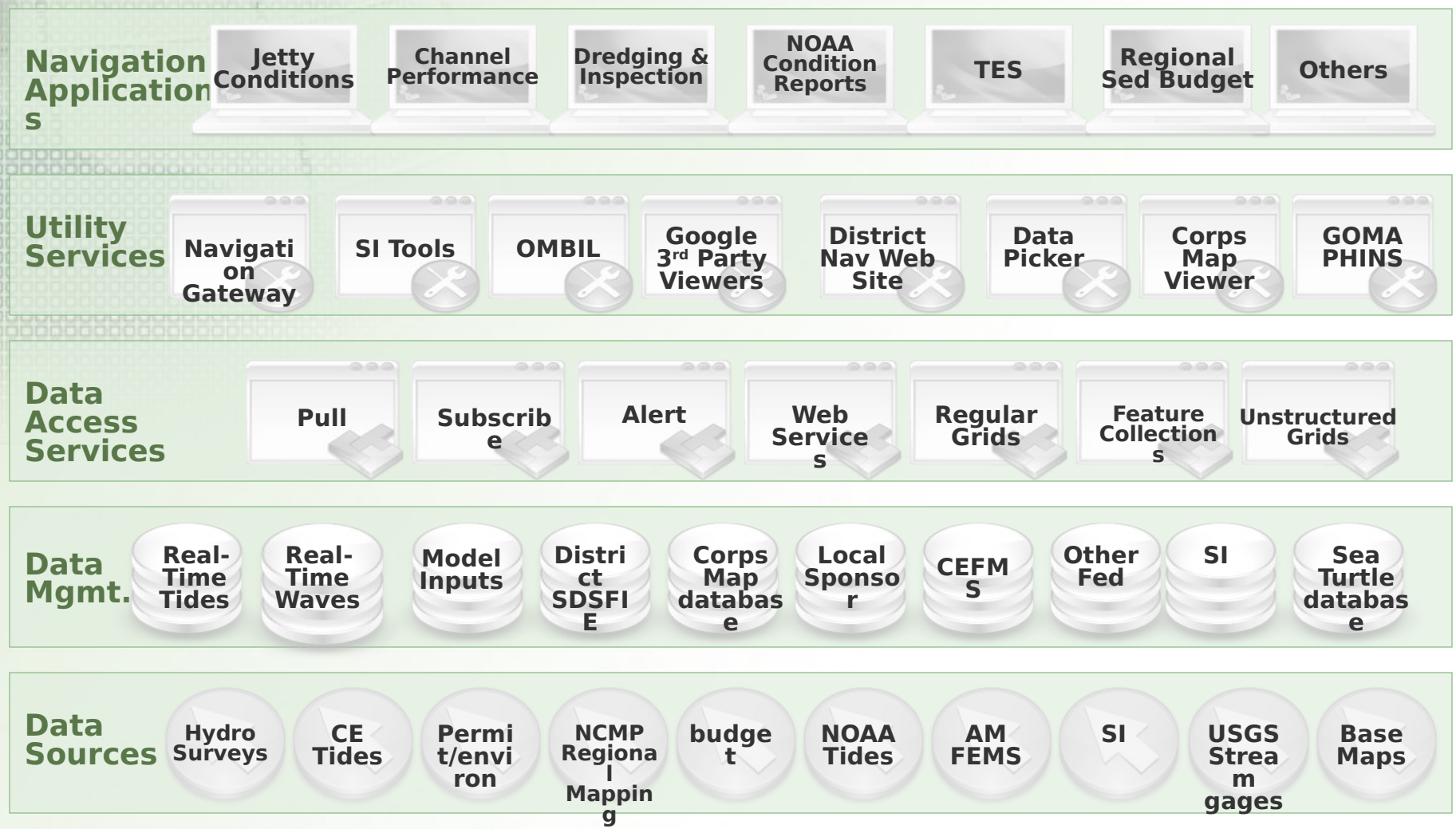
Data - Tools - Training

Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

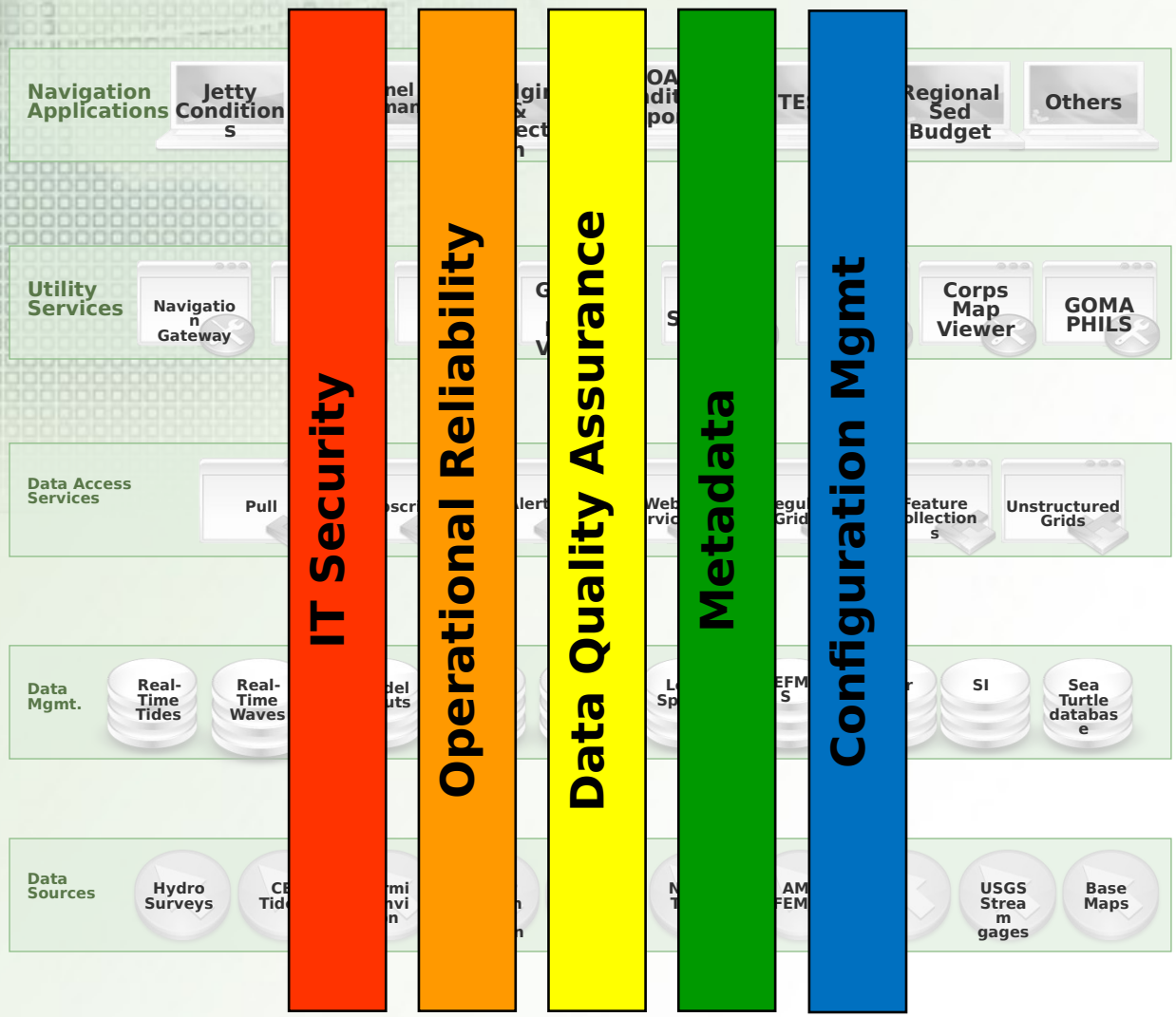
IOOS Data Management and Communication



IOOS / USACE Navigation



IOOS / DMAC



Temporal data standards (directional waves, current speed & direction, tide height, transmissivity, backscatter, turbidity, many others)

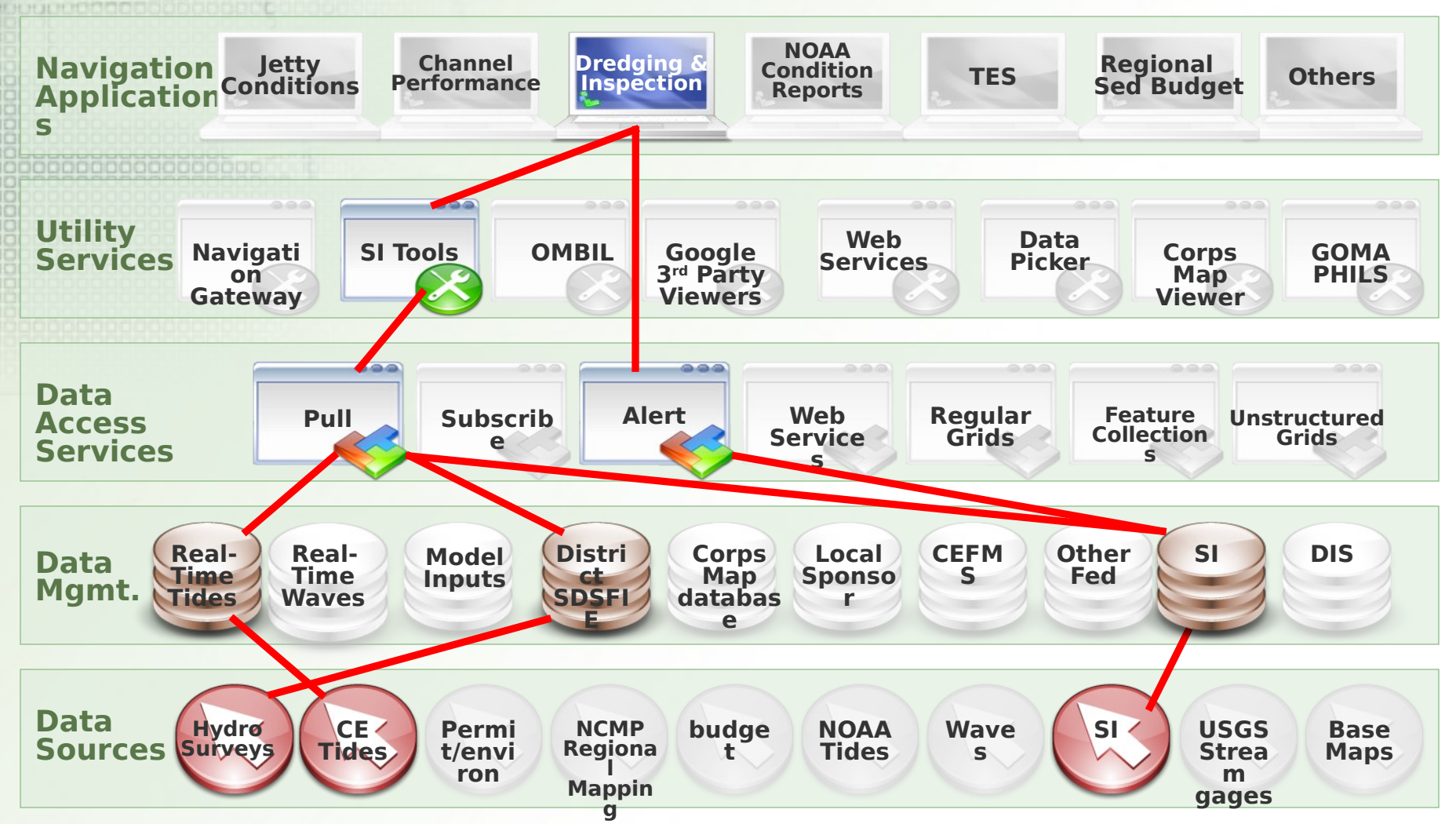
Spatial data standards (SDSFIE, FGDC, ISO, many others)

Modeling data standards (NetCDF, XMDF, DSS, OpenDAP, many others)

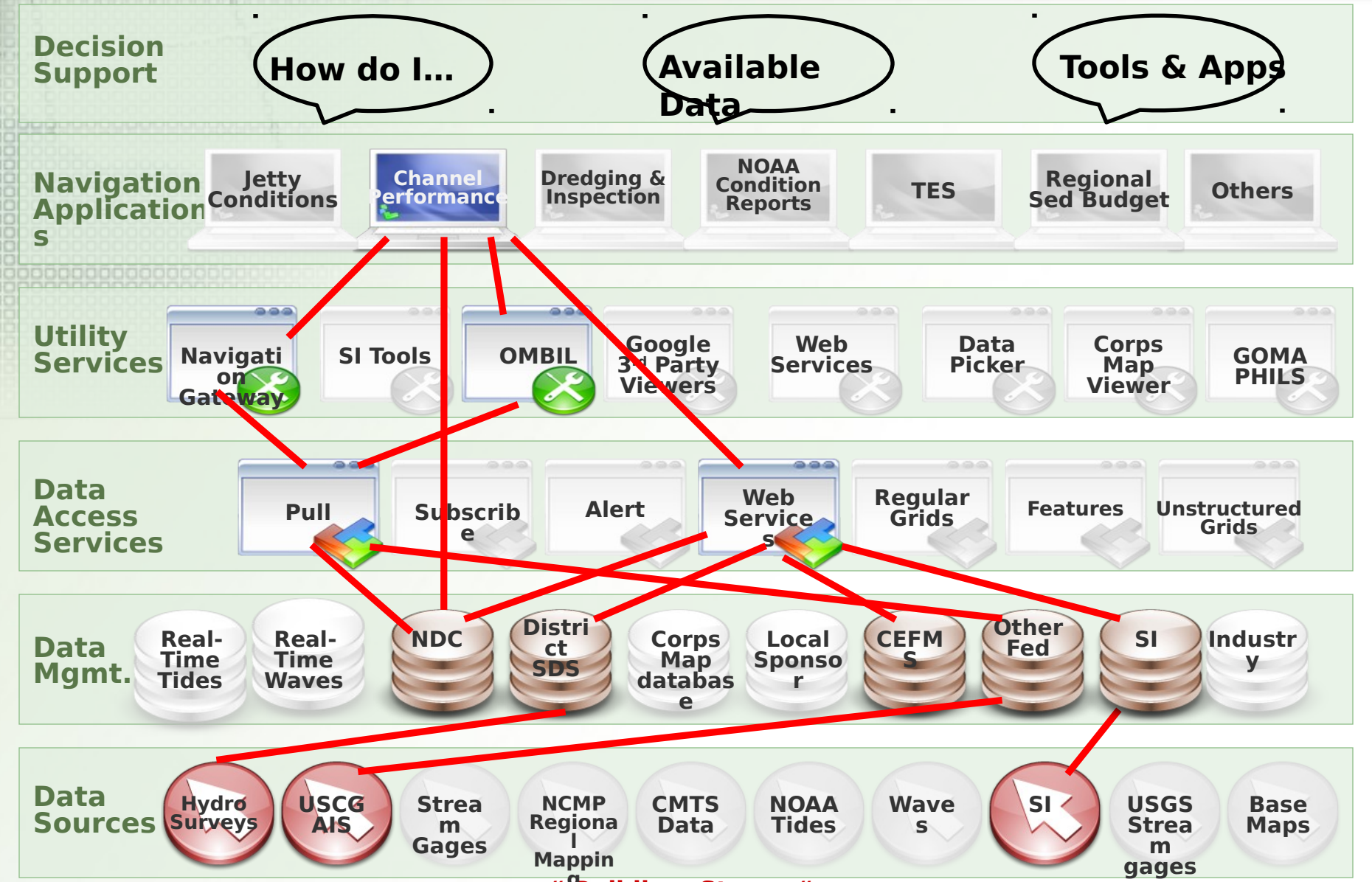
Financial data standards (and other tabular data)

Sensor data standards (wave gage, lidar, tide gage, multibeam, GPS,

Navigation: Dredging & Inspection



Navigation: Channel Performance



Challenges

Goal (?): Leverage IOOS DMAC & Digital Coast concept for USACE

Effort – requires a detailed design based on requirements

Size of effort – requires Districts, Divisions, Labs, HQ

Commitment – requires discipline & participation

Process – complex, technical, does not currently exist

Infrastructure – Corps-wide, does not currently

Thank You